

## CLAIMS

What is claimed is:

- 1           1.     A system for organizing distributed file storage, including:  
2           a highly scalable set of servers;  
3           a unified client-server model;  
4           a standard set of network services; and  
5           a small dynamic list of the closest neighbor servers which is maintained by each  
6     member of said set of servers.

- 1           2.     The system of Claim 1, wherein said set of highly scalable servers are  
2     connected via a peer-to-peer network.

- 1           3.     The system of Claim 1, wherein said set of highly scalable servers are  
2     functionally equivalent.

1           4.     A method for organizing distributed file storage including the steps of:  
2           utilizing a plurality of servers in a highly scalable set of servers;  
3           supporting a standard set of network services by each member of said plurality of  
4   servers;  
5           wherein said plurality of servers is divided into more than one group of servers;  
6           wherein each member of said plurality of servers belongs to at least one of said  
7   more than one group of servers; and  
8           wherein each member of said plurality of servers maintains only a small dynamic  
9   list of the closest neighbor members of said plurality of servers.

1           5.     The method of Claim 4, further including the step of:  
2           connecting each member of said plurality of servers via a peer-to-peer network.

1           6.     The method of Claim 4, further including the step of :  
2           maintaining functional equivalence among each of said members of said plurality  
3   of servers.

1           7.     The method of Claim 4, further including the step of:  
2           verifying the availability of said closest neighbor members of said plurality of  
3   servers.

1           8.     The method of Claim 7, further including the steps of :  
2           polling said dynamic list of the closest neighbor members of said plurality of  
3     servers;  
4           adding said each member of the plurality of servers into any of said more than one  
5     group of servers; and  
6           switching said each member of the plurality of servers into any of said more than  
7     one group of servers which has better network connectivity parameters.

1           9.     The method of Claim 8, further including the steps of:  
2           maintaining files in said distributed file storage;  
3           dividing said files into a plurality of pieces; and  
4           storing each of said pieces on a different member of said plurality of servers.

1           10.    A method of client access to a distributed file storage system, including  
2   the steps of:  
3           utilizing a plurality of servers in a highly scalable set of servers;  
4           supporting a standard set of network services by each member of said plurality of  
5   servers;  
6           wherein said plurality of servers is divided into more than one group of servers;  
7           wherein each member of said plurality of servers belongs to at least one of said  
8   more than one group of servers; and  
9           wherein each member of said plurality of servers maintains only a small dynamic  
10   list of the closest neighbor members of said plurality of servers.

1           11.    The method of Claim 10, further including the step of:  
2           connecting each member of said plurality of servers via a peer-to-peer network.

1           12.    The method of Claim 10, further including the step of :  
2           maintaining functional equivalence from said client's standpoint among each of  
3   said members of said plurality of servers.

1           13.    The method of Claim 10, further including the step of:  
2           verifying the availability of said closest neighbor members of said plurality of  
3   servers.

1           14.     The method of Claim 13, further including the steps of :  
2           polling said dynamic list of the closest neighbor members of said plurality of  
3     servers;  
4           connecting said client to any of said each member of the plurality of servers; and  
5           switching said client to any of said each member of the plurality of servers which  
6     has better network connectivity parameters and smaller workload to improve level of  
7     service.

1           15.     The method of Claim 14, wherein said client writes a file, further  
2     including the steps of:  
3           dividing said file into a plurality of pieces;  
4           sending said plurality of pieces to the client's server; and  
5           distributing said plurality of pieces to the closest neighbor servers in order to  
6     achieve an appropriate fault tolerance level.

1           16.     The method of Claim 14, further including the steps of:  
2           maintaining files in said distributed file storage;  
3           dividing said files into a plurality of pieces; and  
4           storing each of said pieces on a different member of said plurality of servers.

1        17.     The method of Claim 16, further including the steps of:  
2        identifying said client's name in name space;  
3        sending a request from the client server to any neighbor server;  
4        collecting a set of said plurality of file pieces to assemble a file;  
5        checking for file pieces in local cache and on said neighbor server;  
6        sending said set of pieces to the client server;  
7        transferring said set of pieces to the client.

1        18.     The method of Claim 17, further including the step of:  
2        sending all of said pieces of said files from the neighbor servers to said client  
3        server simultaneously in order to optimize bandwidth and minimize overall file access  
4        time.

1           19.    A method of naming files inside a distributed file storage system,  
2 including the steps of:  
3           utilizing a plurality of servers in a highly scalable set of servers;  
4           supporting a standard set of network services by each member of said plurality of  
5 servers;  
6           naming said files uniformly within said storage system;  
7           naming said files independently of any member of said plurality of servers;  
8           wherein said plurality of servers is divided into more than one group of servers;  
9           wherein each member of said plurality of servers belongs to at least one of said  
10 more than one group of servers; and  
11           wherein each member of said plurality of servers maintains only a small dynamic  
12 list of the closest neighbor members of said plurality of servers.

1           20.    The method of Claim 19, further including the step of:  
2           connecting each member of said plurality of servers via a peer-to-peer network.

1           21.    The method of Claim 19, further including the step of :  
2           maintaining functional equivalence among each of said members of said plurality  
3 of servers.

1           22.     The method of Claim 19, further including the step of:  
2           verifying the availability of said closest neighbor members of said plurality of  
3           servers.

1           23.     The method of Claim 22, further including the steps of :  
2           polling said dynamic list of the closest neighbor members of said plurality of  
3           servers;  
4           adding said each member of the plurality of servers into any of said more than one  
5           group of servers; and  
6           switching said each member of the plurality of servers into any of said more than  
7           one group of servers which has better network connectivity parameters.

1           24.     The method of Claim 19, further including the steps of:  
2           maintaining a uniform name space as a tree with a common root and logical  
3           pathways; and  
4           maintaining data files and directory files.

1           25.     The method of Claim 24, further including the steps of:  
2           maintaining the directory files as executable files with their own executable code  
3           and data; and  
4           providing translation from said logical pathways inside said uniform name space  
5           to a unique file identifier.